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# CONTROLLING ACUTE RESPIRATORY INFECTIONS: STRATEGIES FOR THE 1990s

SUMMARY

The present report has been prepared in response to Executive Board decision 1990/20 (E/ICEF/1990/13). It provides the latest information on the magnitude of acute respiratory infections (ARI), reviews the status of UNICEF support to national ARI efforts and analyses lessons learned to date. It outlines basic control strategies and makes recommendations for action in the 1990s.

ARI remains a principal killer of infants and children, up to 4.3 million per year, accounting for one third of all deaths in that age-group. The World Summit for Children, held on 30 September 1990, called for a one third reduction in ARI mortality by the year 2000, which will also contribute significantly to other principal Summit goals: reducing infant and child mortality and reducing severe and moderate malnutrition. The present report reviews and further endorses the basic strategy of standard case management, immunization and preventive measures to control ARI.

A global consensus on the control of ARI was reached at the International Consultation on Control of Acute Respiratory Infections held in December 1991. It is critical that community-level health workers and providers be empowered to diagnose and provide front-line treatment and to use antibiotics (after training and under close supervision). Essential and affordable drugs must be made available when and where needed. In addition, effective means of communication to inform and educate people will be necessary if significant breakthroughs are to be made in the implementation of national policies in the control of ARI.

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## INTRODUCTION

1. In 1990, a policy review on acute respiratory infections (ARI) was presented to the Executive Board (E/ICEF/1990/L.7). The policy review provided an overview of ARI, described the UNICEF experience in the control of ARI and made a series of recommendations for future action. The Executive Board welcomed the policy review and requested that a strategy paper on the subject be prepared for the 1992 session (E/ICEF/1990/13, decision 1990/20). In response to that request, the present report provides the latest information on the magnitude of the ARI problem, reviews the status of UNICEF support to national ARI efforts, analyses lessons learned to date and, on the basis of the experience, outlines basic control strategies and recommendations for action for the 1990s.

2. Acute respiratory infections are among the most common diseases in children the world over. On average, children under five years of age suffer five to nine episodes of ARI if they live in urban areas and from three to five episodes if they live in rural areas. This incidence is almost the same for children living in developed and developing countries, although with the higher level of interaction in developed countries the urban/rural differences are less marked. The vast majority of these infections are caused by common cold viruses and result in mild and isolated illness. None the less, ARI represents either the first or the second cause of visits to health services by young children world wide. In developing countries, between 20 to 60 per cent of all outpatient consultations with children are for ARI.

3. Furthermore, while the annual incidence of pneumonia, the most severe manifestation of ARI, is 3 to 4 per cent in children under five years of age in industrialized countries, it ranges from 10 to 20 per cent in developing countries, reaching levels as high as 80 per cent in populations with a high prevalence of risk factors such as malnutrition and low birth weight.

4. In 1990, there were approximately 11,800 ARI-related deaths per day among children under five years of age, resulting in an annual toll of about 4.3 million lives, or one third of all deaths in this age group. 1/ If the average incidence of pneumonia remains constant, and if the current fatality rate of 5 per cent continues, approximately 45 million children will die from ARI-related causes in the 1990s.

5. In 1990, the World Health Organization (WHO) estimated ARI as the largest single cause of mortality among young children. This is attributable in part to the progress made in reducing deaths from other causes such as immunizable diseases and diarrhoeal dehydration. It is also due to the lack of effective ARI control efforts throughout much of the developing world.

6. At least five aspects of ARI must be considered in developing effective control strategies:

(a) The vast majority of ARI deaths are caused by pneumonia, 2/ up to 80 per cent of which are bacterial and could be treated with antibiotics;

(b) ARI is not a single syndrome. Effective control programmes require the recognition and treatment of pneumonia as well as the distinction between pneumonia and less severe diseases;

(c) On average, about 20 per cent of ARI deaths are linked to measles or pertussis, which are preventable through immunization;

(d) Essential to the success of ARI control programmes are the appropriate use and availability of antibiotics at health facilities for use by trained health workers. While reducing the use of antibiotics for coughs and colds usually results in a net decrease in the amount of drugs required for ARI, ensuring sufficient and constant supplies throughout the health system remains a major challenge;

(e) Most pneumonia deaths occur at a very early age. Several community-based studies suggest that about one half of these deaths occur in the first six months of life. This age distribution of deaths has several programme implications.

7. In September 1990, the World Summit for Children called for a one-third reduction in ARI-related deaths, compared with 1990 levels, by the year 2000. Achieving that goal is a precondition to achieving broader infant and child mortality reduction goals endorsed by the Summit. It will also contribute to reducing malnutrition among young children, another key child health goal for the 1990s.

8. UNICEF is committed to achieving substantial reductions in ARI-related deaths during the next decade. Action will be taken on three levels: (a) efforts will be made to reduce ARI deaths directly through the promotion of correct case management and indirectly through immunization; (b) increased attention to other health interventions and to improving children's nutritional status will also help to reduce the incidence and severity of pneumonia; and (c) preventive measures will be pursued that address risk factors both in individual children (e.g., low birth weight, vitamin A deficiencies, bottle feeding) and in the environment (e.g., indoor air pollution, passive smoke, overcrowding and chilling caused by lack of heat or clothing).

9. In December 1991, WHO, the United Nations Development Programme (UNDP) and UNICEF co-sponsored the first International Consultation on Control of Acute Respiratory Infections (ICCARI). The objectives of the Consultation were to provide leaders from the health community with up-to-date information and exchange of experiences on ARI control, including case management and national programme implementation; to promote a global consensus on the feasibility of ARI mortality reduction and the actions needed; and to generate increased donor interest in ARI. Over 400 participants from 60 countries attended, including ministers of health, other high-ranking government

officials, paediatricians, representatives of international development agencies and others working on ARI control at the national level. In addition to clarifying basic elements of standard case management and strengthening a global consensus on strategies and approaches as outlined in the present report, ICCARI also increased the understanding of and commitment to ARI control at the highest political levels. Participants called for a second consultation in 1994 to review progress, exchange experience and plan for the second half of the decade.

10. During the past two years, close cooperation has continued with WHO. Joint meetings have been held to achieve consensus on basic control strategies, to develop evaluation indicators and to specify key elements of home management. UNICEF field offices are encouraging adaptation of WHO treatment guidelines and training materials at the country level and are supporting research and monitoring activities in conjunction with WHO. In most countries, UNICEF and WHO are coordinating their support for national ARI control programmes to ensure consistency of advice and avoid duplication of effort.

## I. PROGRAMME EXPERIENCE

11. The 1990 policy review outlined a number of lessons learned about ARI control from the limited experience available at that time. During the past two years, UNICEF involvement in national ARI control efforts has expanded significantly, both confirming early impressions and deepening appreciation of the factors that contribute to success in this area. Highlights of recent experience are outlined below and regional trends are given in the annex.

### A. Case management

12. Standard case management is the central control strategy promoted by UNICEF and WHO. It has three main elements:

(a) Early recognition of pneumonia by health workers who distinguish it from other ARI by looking for such signs as the inability to drink, rapid breathing and chest in-drawing;

(b) Prompt treatment at home with oral antibiotics for children who do not have a severe case of pneumonia;

(c) An initial dose of antibiotics and referral to hospital for children who have severe pneumonia.

13. During the past several years, a number of studies have tested the effectiveness of standard case management (e.g., in Bangladesh, India, Indonesia, Nepal, Pakistan, the Philippines and the United Republic of Tanzania). Without exception, they yielded dramatic reductions in both ARI-related mortality (between 25 and 67 per cent) and in overall mortality

(from 13 to 55 per cent). While implementing control programmes on a larger scale is more complicated, the studies demonstrate the potential impact of standard case management and provide models for many of the national programmes now under way.

14. The major constraints to implementing case management include the reluctance of doctors and other health workers to change long-standing practices (e.g., prescription of antibiotics for coughs and colds); the difficulty in convincing mothers that children without pneumonia do not need antibiotics; the reluctance in some countries to involve community health workers (CHWs) in locating cases of pneumonia and/or administering treatment; and the inability of many health systems to ensure adequate training for health workers and reliable supplies of antibiotics, two essential managerial activities of the case management strategy.

## B. The role of effective national leadership

15. Experience suggests that strong national coordination is necessary for successful control efforts, especially during early stages of programme development. The form of this coordination varies considerably, from separate units within ministries of health to national steering committees that involve a broad range of technical personnel. Whatever the mechanism, key functions at the central level include the following:

(a) Policy development. Decisions must be taken on a number of policy issues such as functions as regards diagnosis and treatment at each level of the health delivery system, including CHWs; children who should be examined for possible pneumonia; key signs to identify pneumonia; criteria for referral to hospital of children with signs of pneumonia; antibiotics for standard treatment of pneumonia at home and at hospital; and communications messages for home care advice. National programmes are encouraged to seek broad-based consensus on these issues, involving national medical associations, influential clinicians and other groups and/or individuals whose support for the programme is critical to long-term sustainability;

(b) Plans of action. While implementation of control activities occurs primarily at district and local levels, national plans of action ensure consistency in policies and treatment, as well as rational expansion of the programme to all areas of the country. Thus, while continuing to integrate ARI control activities with other district-level services, national programmes must also address the need for continuity of activities among different regions. Comprehensive national plans of action are essential if the control of ARI is to make a significant impact nationally;

(c) Evaluation and monitoring. National coordinating mechanisms can play a key role in monitoring the progress of control efforts in achieving operational targets and, at reasonable intervals, determining their impact on child health and survival. WHO is in the process of developing instruments to facilitate this task, including attitude and practice surveys at health

facilities and in households. UNICEF support for the implementation of these instruments and for the formulation of realistic objectives at all levels will be essential;

(d) Coordination of external support. Experience to date underlines the importance of clear national guidance on where and how donor support is directed, especially when ARI control activities are funded by different sources in different areas of the country. Rational development and expansion of the programme requires consistency in technical policies and managerial procedures.

## C. Phasing of ARI control programmes

16. In the 1990 policy review, UNICEF supported a phased approach to the implementation of ARI control activities. This involves an initial emphasis on establishing correct case management at first-level health facilities, followed by the involvement of community-based health providers and, finally, broad-based education about home care. While experience during the past two years has underlined the need for flexibility, it has also confirmed the wisdom of establishing services at referral facilities before moving ahead with the training of CHWs or providing messages about home care. Referral is a basic component of standard case management; without adequate back-up services at higher levels, CHWs will be unable to ensure proper care of children with severe pneumonia or very severe disease, thus undermining the credibility of the programme.

17. It is also imperative that if the programme is to be effective, community-level health care workers must be empowered, following training and with guidance and close supervision, to use antibiotics.

18. In countries in which ARI control programmes are also phased in geographically, i.e., in which implementation has begun in limited areas before "going-to-scale", the involvement of CHWs in those areas may precede the establishment of referral services in other areas of the country.

## D. Logistical requirements of ARI control programmes

19. An adequate supply of drugs and the widespread availability of simple technologies to assist in the diagnosis and treatment of pneumonia will become increasingly important in the next few years.

20. First, standard case management requires regular, adequate supplies of appropriate antibiotics. At present, many national programmes either have inadequate supplies or depend almost entirely on external support for their purchase and distribution. Neither of these strategies lends itself to long-term sustainability. Alternative approaches must be developed, including greater reliance on community procurement and management of drug supplies,

cost-sharing, etc., along the principles of the Bamako Initiative, and local production of antibiotics (e.g., cotrimoxazole) where feasible.

21. Secondly, the provision of 30- to 60-second respiratory rate timers to health workers who handle pneumonia cases helps to ensure consistency in treatment and diagnosis. The ability of health workers to observe rapid breathing (rather than use a stethoscope) is, in fact, one of the key aspects of standard case management and the reason why diagnosis is possible at peripheral and community levels. WHO and UNICEF have collaborated in the development of a simple and inexpensive timer, which will be available through the UNICEF Supply Division in 1992.

22. Finally, WHO and UNICEF have collaborated on the development of a low-cost oxygen concentrator, which can function adequately in the adverse environmental conditions of developing countries such as high humidity, high temperature, dusty air and wide variations in the electricity voltage. The availability of sufficient amounts of oxygen for severe cases can reduce mortality from pneumonia by up to 50 per cent. While the new models developed are relatively inexpensive, most programmes will require external support to procure sufficient quantities for even the most advanced health facilities.

## E. ARI communications

23. The 1990 policy review described the main goal of ARI communications as helping caretakers to obtain the right therapy (antibiotics), for the right children (with pneumonia), from a trained health worker, at the right time and for the right duration. Experience over the past two years has confirmed that view and has underlined the need to coordinate messages with available services. Caretakers taught to recognize signs of pneumonia and seek help must have access to trained providers. If not, the confusion that results may jeopardize the long-term effectiveness of control efforts.

24. Given the early stage of development of most control programmes, emphasis remains on improving interpersonal communication between health providers and caretakers. The results of ethnographic surveys and other operational research (e.g., in Bangladesh, Bolivia, the Gambia and Thailand) are being used to improve messages and materials in this regard. Once the control and support systems are built and in place, communication efforts will need to be strengthened in order to promote information and education on the control of ARI.

## F. Training of health personnel

25. In 1990, WHO was in the process of developing a series of training materials for ARI control. The materials have now been adapted in several countries and considerable experience has been gained in this area. For the most part, this experience has underlined the importance of well-organized training, including hands-on practice in the counting of respiratory rates and

recognition of chest in-drawing, and clear distinctions between different categories of providers (e.g., those who diagnose and provide treatment and those who simply recognize clinical signs and advise on when to seek help). The need for regular and high-quality supervision has also become increasingly clear.

26. UNICEF support has been, and will continue to be, crucial to the scope and quality of these training efforts. Continued collaboration with ministries of health and WHO in the design, implementation and evaluation of national training strategies will be an area of priority concern in the 1990s.

## G. Household management of ARI

27. Despite the need for correct and timely interaction with health providers, caretakers can play a key role in preventing deaths from pneumonia. An experts meeting on the household management of the control of diarrhoeal diseases (CDD) and ARI organized in April 1990 by UNICEF and WHO (in collaboration with the Johns Hopkins University (United States)), identified three actions for caretakers at the household level: recognizing signs of pneumonia or serious illness; seeking treatment quickly when these signs occur; and complying with the treatment instructions of trained health providers.

28. Experience to date, supported by the results of ethnographic research, confirms mothers' abilities to discern serious illness and their willingness to use whatever services are available. While there is often initial resistance to a reduced dose of prescription drugs (which are now widely over-prescribed for coughs and colds), mothers support standard case management when they have access to trained providers and affordable drugs, if instructions are clearly explained and if compliance with instructions improves the health of their children.

## H. Operational research

29. The 1990 policy review described a special multi-country ARI project involving Bolivia, the Gambia and Thailand. During the past two years, with the continued technical assistance of the Johns Hopkins University, the focus of this effort has been on the development of operational research in key areas of programme implementation. In all three countries, ethnographic surveys have been completed which increase understanding of caretakers' attitudes and practices related to ARI. The results have been used to improve training efforts as well as to design materials for use in interpersonal communication between health workers and mothers.

30. Additionally, research has been done in all three countries, on the treatment for pneumonia offered by different levels of the health system: in Bolivia, the effectiveness of competency-based training for CHWs was analysed; in the Gambia, a functional analysis of the health system was completed; and

in Thailand, a comparison was made of different training strategies for village health workers (VHWs). In each case, results are being used to improve programmes and develop research protocols for use in other countries.

31. As indicated in the review of UNICEF support to ARI control efforts, many countries are either planning or are already involved in operational research in a wide variety of areas. UNICEF and WHO are requested increasingly to assist countries in the design and implementation of these efforts. In doing so, they can also help national programmes balance research needs against the implementation of control activities, e.g., training, assuring adequate drug supplies, supervision, communication, monitoring and evaluation.

## I. Prevention of pneumonia

32. During the past two years, efforts to identify key risk factors for pneumonia have continued. Supported by WHO and UNICEF, the London School of Hygiene and Tropical Medicine is conducting an intensive review of risk factors for pneumonia, with a view towards assessing their relationship to, and relative importance in, causing the disease among young children. The results of this study will be discussed during 1992, followed by further research on interventions to reduce these risks.

33. At present, immunization remains the key strategy for preventing pneumonia. About one in five pneumonia deaths is linked to measles and pertussis since pneumonia often develops as a complication of these two conditions. A study in India, for instance, showed that children who recovered from measles had a sixfold increase in acute lower respiratory infections during the following six months. None the less, the impact of immunization is not adequate for total prevention. Even if all children were immunized against measles and pertussis, the number of pneumonia deaths would be reduced by no more than 20 per cent. Furthermore, measles vaccinations given at nine months of age cannot influence the 50 per cent of pneumonia deaths occurring in the first six months of life. Fortunately, prospects for an effective pneumonia vaccine look promising, as research continues as part of both the WHO vaccine development programme and the inter-agency Children's Vaccine Initiative.

34. Improving the nutritional status of young children is the second major preventive strategy. Two of the most important risk factors for pneumonia are low birth weight and malnutrition. Low-birth-weight babies in Brazil and India were found to have a risk of dying from pneumonia three to eight times higher than children of average weight; malnourished children are, on average, twice as likely to die. Two other promising interventions are the promotion of breast-feeding and the correction of vitamin A deficiencies. The benefits of breast-feeding are well established. In Brazil and Peru, for instance, non-breast-fed infants had a greater risk of pneumonia, 3.5 and 5 times, respectively. While less comprehensive than those regarding ARI, studies from four countries on vitamin A deficiency suggest that it may increase the incidence of pneumonia.

35. Finally, links between environmental risk factors and ARI are becoming increasingly clear. While more research is needed, especially in developing countries, factors already identified include indoor and outdoor air pollution, exposure to passive smoke, overcrowding and chilling. During the next few years, steps can and should be taken to make the environment less dangerous for children and, at the same time, less conducive to ARI.

### J. Similarities with efforts to control diarrhoeal diseases

36. While pneumonia must be treated sooner than diarrhoeal disease, thus calling for greater skill on the part of the health worker and better access to antibiotics, there are also many similarities. Mothers and families can play a key role in recognition and prevention of the disease. Health workers can be taught case management. Increased fluids and continued feeding are essential to successful treatment. At the same time, a few areas can be substantially improved. For example, linkages with nutrition must be fully understood and interventions developed on this basis. Prevention must also be emphasized early and included as an essential element in national control programmes. Finally, the synergism of various interventions (e.g., CDD, ARI, expanded programme on immunization, micronutrient deficiencies) must be fully exploited, both in the development of basic strategies and approaches and in the implementation of control activities.

## II. UNICEF SUPPORT TO NATIONAL ARI PROGRAMMES

### A. Objectives

37. UNICEF involvement in ARI control activities has the following main objectives:

(a) To reduce mortality due to pneumonia in children under five years of age;

(b) To reduce the inappropriate use of antimicrobials and other drugs, mainly cough and cold medicines, for the treatment of ARI in children;

(c) To reduce the incidence of acute lower respiratory infections, particularly pneumonia.

### B. Strategies

38. To achieve those objectives, UNICEF will promote three main ARI control strategies in the 1990s:

(a) Standard case management to reduce mortality through proper diagnosis and the appropriate use of antibiotics for the treatment of acute lower respiratory infections, while discouraging the abuse of antibiotics and other drugs for upper respiratory infections;

(b) Immunization to reduce both morbidity and mortality. At present, only measles, pertussis and diphtheria can be prevented by immunization, but vaccines against pneumococcus and Haemophilus influenzae, the main bacterial agents of pneumonia in children, are actively being developed;

(c) The reduction of risk factors for pneumonia to reduce the incidence of the disease. This includes factors affecting both individual children (e.g., with low birth weight and malnutrition) and the environment (e.g., indoor and outdoor air pollution, passive smoke, overcrowding and chilling in young infants).

39. In developing these strategies, UNICEF will continue to encourage national ARI programmes to give priority to training health personnel in standard case management; improving home care for ARI, emphasizing the role of caretakers in recognizing signs of illness, seeking appropriate care and complying with treatment instructions; increasing the involvement of CHWs; and identifying and responding to the major risk factors for ARI among young children. The drug supply system, especially at district and peripheral levels, will receive special attention with a view to establishing affordable and sustainable systems on the basis of the Bamako Initiative.

## III. RECOMMENDATIONS

40. The Executive Director recommends that, in order to reduce morbidity and mortality caused by ARI, especially in infants and children under five years of age, the Executive Board endorse the following actions, and that the progress made be reported annually in the report of the Executive Director:

(a) Support to ARI control at the national level. While inclusion of ARI control activities in area-based primary health care initiatives, or as part of initial efforts to strengthen district-level health services, is encouraged, UNICEF involvement will be based on support to national ARI control programmes and control activities throughout the country, integrated with other efforts to reduce and prevent infant and young child mortality and morbidity;

(b) Building on existing structures. During the past few years, efforts in some countries to expand immunization coverage have considerably strengthened supply distribution, service delivery networks and other aspects of national health systems. ARI control activities will take full advantage of these improvements and be fully integrated into the basic package of health services offered by peripheral and first-level facilities;

(c) Establishment of clear national policies and plans of action. National policies and plans of action are an essential first step in the development of ARI control programmes. UNICEF will limit support to ad hoc ARI control activities (i.e., the provision of drugs) in countries where this process is not completed or well under way;

(d) Sustainability of ARI control programmes. Effective ARI control requires a functioning health system that can regularly train and supervise staff, provide adequate quantities of antibiotics to all health facilities and handle severe pneumonia or illness through referral to major hospitals. In countries where health systems cannot meet this challenge, emphasis will be given to strengthening the operation and management of health facilities (especially at district and local levels) before ARI control activities are initiated. The establishment of drugs logistics systems, in line with the principles of the Bamako Initiative, will also be encouraged. This process should result in greater community involvement, management and control over local health facilities;

(e) Involvement of CHWs in the diagnosis and treatment of pneumonia. The incidence of death from pneumonia is highest among young children (e.g., under six months of age) and in the poorest, most isolated areas. For these reasons, the involvement of CHWs in locating, treating and referring cases of pneumonia is essential to the long-term viability of control efforts. As soon as adequate services are established in first-level health facilities, national programmes will be encouraged to identify VHWs or CHWs who can be trained either to refer cases to the health system or to act as front-line providers of standard case management;

(f) Full involvement of mothers and communities. Mothers must be taught to recognize signs of serious illness, seek help when necessary and comply with treatment instructions. To do so, efforts must be made to find out what mothers already know and reinforce healthy practices while discouraging negative ones. Without the full involvement of communities, the youngest, most vulnerable children cannot be reached on a sustained, reliable basis. Communications efforts will be promoted to support these activities.

41. During the next few years, UNICEF will continue to provide support in the following areas:

(a) Adaptation of technically sound norms for diagnosis and treatment, including their application by such health personnel as CHWs, as appropriate;

(b) Training and supervision in the standard case management of ARI, both for health workers at the clinic level and at first-referral facilities and for CHWs in various settings;

(c) Provision of appropriate drugs in reasonable quantities at the initial stage. One of the key objectives of all ARI programmes must be to provide the right drug, to the right child, at the right time, for the right duration. This will be built into the drugs logistics system based on the principles of the Bamako Initiative and supported, controlled and managed by the communities;

(d) Development of sound communication strategies that are fully integrated into national programmes and supportive of reliable, well-established services. First priority will be given to the design and

production of teaching and information materials for use by health workers in face-to-face interaction with caretakers of young children. Once standard case management is well established at first-level health facilities and, where appropriate, among CHWs, more extensive, innovative communication activities will be developed, through radio, television and other mass media;

(e) Provision of appropriate technology for the diagnosis and treatment of pneumonia, including timers for counting respiratory rates and oxygen concentrators for use at small hospitals and clinics;

(f) Prevention of pneumonia by ensuring access to immunization, good nutrition and a healthy environment and by promoting breast-feeding. While the initial emphasis of control programmes must be on improving case management to reduce ARI-related mortality, efforts must begin early to reduce the incidence of the disease. Immunization against measles and pertussis is the most effective preventive measure available at present. The development of vaccines against pneumococcus and Haemophilus influenzae will also receive priority support. Furthermore, UNICEF will support the improvement of interventions to reduce both host and environmental risk factors (e.g., better nutrition and reduced air pollution).

## IV. THE CHALLENGE AHEAD

42. To meet the World Summit goal of a one-third reduction in ARI-related deaths, access to standard case management must be raised from its current 20 per cent to 60 per cent by the year 2000. This means that 6 out of 10 children suffering from ARI episodes will receive proper treatment, resulting in the prevention of approximately 15 million deaths by the end of the decade. Given the current status of most ARI control programmes and the many other health problems demanding attention, this is a formidable challenge.

43. While significant progress will be made through standard case management and other measures, it is likely that major breakthroughs in the control of ARI will depend on the degree of success in the following three areas:

(a) The capacity of health workers and providers at the peripheral level to diagnose and provide front-line treatment through the use of antibiotics (given proper training and close supervision);

(b) The availability of appropriate and affordable drugs through a national drugs logistics system;

(c) The empowerment of the people with information and knowledge on the control of ARI.

Notes

1/ Among children between the ages of two months and five years old, approximately 2.8 million deaths are from pneumonia, 800,000 are caused by neonatal pneumonia, 480,000 are associated with measles and 260,000 are associated with pertussis.

2/ ARI includes all infections of the respiratory tract from the nose and throat down to the lungs and including the ears. This includes ear infections, sore throat, common cold, bronchitis, croup, bronchiolitis and pneumonia, which is an infection of the lung itself. The most frequent ARI is the common cold and the most severe is pneumonia.

## Annex

### REVIEW OF UNICEF ASSISTANCE TO NATIONAL ARI CONTROL EFFORTS

1. Most UNICEF offices are supporting ARI control efforts at either the national or subnational level. While this support varies considerably among countries, trends are evident both within and across regions. Based on 1991 annual reports and other programme documents, the most important trends are outlined below.

2. National ARI control programmes are least developed in West and Central Africa. In several countries (Cape Verde, the Central African Republic, Mali and the Niger), Governments recognize the problem of ARI, but for various reasons are postponing the initiation of formal control programmes. In others (Benin, Guinea, Côte d'Ivoire and Togo), ARI control activities are integrated into more general efforts to strengthen district-level health services and the management of the health system at various levels (through implementation of the Bamako Initiative strategy, etc.). In the Gambia, two studies have been undertaken to assist development of the national programme, one of which was an ethnographic study of mothers' attitudes and practices related to ARI. Only a few countries (Gambia and Nigeria) have developed clear national policy documents or comprehensive plans of action. Despite this, several are requesting UNICEF support for such activities as increased provision of antibiotics to health facilities and production of communication materials. In the absence of clearly defined policies, some of these ad hoc initiatives are causing confusion and reinforcing negative practices (over-prescription of drugs) rather than improving health services.

3. A similar situation exists in Eastern and southern Africa, although ARI control programmes are slightly more developed there than in other parts of the continent. Most countries have initiated control activities and there is greater awareness of the need for national policies and plans of action. Only a few, however, have moved past the initial stages of implementation and the tendency persists to equate ARI control with the provision of essential drugs or the establishment of village pharmacies, rather than with the development of comprehensive programmes. In some of the countries in which programmes are more advanced (Botswana, Lesotho, Swaziland and Zimbabwe) emphasis is on integration of ARI control activities with such other health services as the treatment of diarrhoeal diseases and malaria and on the development of appropriate communication materials.

4. In South and Central Asia, many countries have already developed national ARI control policies (Bangladesh, India, Nepal, Pakistan and Sri Lanka). Emphasis is on training health workers, including doctors and nurses (through the establishment of ARI training units at major hospitals) and paramedical personnel at peripheral health facilities (through three- to five-day clinical management courses offered at small hospitals and health facilities). In a few countries (Bangladesh, India and Pakistan), research has been done on mothers' attitudes and practices concerning ARI, and the results have been

used to improve training and communication efforts. In almost all countries, ARI control programmes are being phased in, beginning in certain districts and gradually expanding to other areas of the country.

5. In several countries in East Asia and the Pacific, ARI control programmes are also well advanced. National policies and treatment guidelines have been developed in China, the Lao People's Democratic Republic, Fiji, Papua New Guinea, the Philippines, Solomon Islands, Thailand, Tonga, Vanuatu and Viet Nam, and treatment protocols are either completed or in the process of adaptation in Cambodia, Indonesia, Thailand and Viet Nam. There is strong emphasis on operational research, with studies completed or under way in Cambodia, China, Indonesia, Myanmar, the Philippines, Thailand and Viet Nam. Most of the studies are designed to increase understanding about health worker practices and/or mothers' attitudes and beliefs concerning ARI. The training of health workers is also emphasized in many countries.

6. In the Americas and the Caribbean region, a number of ARI control programmes have been under way for some time. In these countries, emphasis is on improving communication strategies in Bolivia, Haiti, Honduras and Mexico and ensuring adequate drug supplies in peripheral health facilities in Bolivia, Honduras, Mexico, Paraguay and Peru. A number of countries (Dominican Republic, Ecuador and Honduras) are experiencing problems or delays in the revision of treatment protocols, which have hampered progress of control efforts. Control programmes in the Americas and the Caribbean are also involving CHWs in the assessment and treatment of ARI, including pneumonia.

7. In the Middle East and North Africa, several countries have developed national ARI control policies and initiated activities in one or more areas (Egypt, the Islamic Republic of Iran, Oman, the Sudan and the Syrian Arab Republic). While attention to training continues at all levels of the health system, a few countries are also pursuing innovative strategies to prevent pneumonia (an anti-smoking campaign in Oman) and to conduct research on beliefs and practices at both the health facility and household level (Egypt). In others, official control programmes have been postponed or delayed because of war and civil unrest (Iraq).

8. Based on this review, a number of general trends can be identified:

(a) In all regions, ARI figures among the top three causes of morbidity and mortality. Furthermore, it often accounts for the largest number of hospital admissions and out-patient consultations (up to one third of all cases in many countries);

(b) Recognition of the seriousness of the ARI problem is increasing in many countries. Wherever this occurs, Governments have approached UNICEF for both technical and financial support in planning and implementing control efforts. The ability of UNICEF offices to respond to these requests has a profound influence on the development of effective national control programmes;

(c) While many countries begin by developing national policies and plans of action, several others are initiating control activities before this process is completed. The result is often unsatisfactory, such as an increased availability of drugs without proper training of personnel and/or dissemination of treatment and prevention messages without adequate services available in the health system;

(d) While a number of national control programmes recognize the potential importance of CHWs in the assessment and treatment of ARI, few have actually begun to involve them on a significant scale. UNICEF support in this area is likely to increase considerably during the 1990s.

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